

Vaisala Thermal Mapping

VAISALA

Product Spotlight

Ice prediction systems for improved deployment of resources and increased driver safety

For road and airport authorities, deploying winter resources in a timely and accurate manner is imperative to prevent snow and ice-related incidents. Road and runway surfaces may form ice at different rates throughout a network due to topography, land use, heat islands, sky view factor, and construction materials – with temperatures varying up to 10°C/18°F within the same region.



Key benefits

Vehicle-mounted infrared thermometers detect the spatial variation of road surface temperature. Air temperature is not a good indicator of road surface temperature, which is why Vaisala deploys infrared thermometers to take direct surface measurements.

Thermal Mapping surveys are conducted across the network under a variety of weather conditions. The weather must be stable for 2-3 hours before and throughout the survey to obtain usable data. These surveys are usually conducted between 23:00 (11:00 p.m.) and dawn, when the minimum road surface temperature is likely to occur.

Time-step Thermal Maps show when sections of the road or runway will reach a critical temperature (freezing point or operational threshold) by delivering an hour-by-hour representation of a Thermal Map to identify expected road temperature changes.

Why Vaisala?

Vaisala's weather and environmental technologies take every measure for unrivaled road network awareness – keeping roadways safe and efficient in any season.

Our instruments and intelligence are built on 85+ years of innovation and are known as the gold standard for precision and reliability. We understand how accurate data and insights do even more by driving sustainable road operations and climate action. Our holistic approach provides customers with end-to-end simplicity, valuable partnership, and a comprehensive portfolio that is constantly evolving.

As recognized experts in transportation, we continue to channel our curiosity into new ways of making roadways safer and more efficient than ever.

Measuring road surface temperature is key to creating models that predict which sections of a road network will form ice, yet road and airport authorities often do not have the capability to measure this. When combined with weather station data, Thermal Mapping provides a network-wide view of forecast (or actual) road surface temperatures.

Vaisala's Thermal Mapping service allows authorities to identify sections of a road or runway network that could become dangerous in winter weather conditions, allowing for fewer disruptions in services during winter months. Resources can then be allocated to critical sections of the network to help prevent vehicle accidents and maintain safe surface conditions.

Applications:

- Ice prediction system: Create a more accurate ice prediction system for road and airport authorities. Road surface temperature, as well as additional forecasting information, is used to create a model that can help identify sections of the road network where ice will form.
- Optimal weather station placement: If weather stations are placed improperly throughout a road or runway network, authorities will not have access to the right information to make proper decisions. Thermal Mapping can help authorities determine the optimal number and location of weather stations.

